

REMARKS

Reconsideration of the present application is respectfully requested.

Continuity data has been inserted into the specification, as requested by the Examiner.

The informalities noted by the Examiner in claims 1-7 have been corrected. In addition, the claims have been amended in order to conform more closely with U.S. practice. Claims 12-15 have been added to the application.

The amount of fixing agent and plant nutrient now recited in the claims finds support in the original application. See page 6, lines 36-38 for the fixing agent and page 7, lines 2 and 9-10 for the plant nutrient. See also the original claims.

The objection to the Polish patent abstracts is not exactly understood. PL 146138 and PL 159474 are mentioned in the specification as polymer prior art and are not relevant to the invention being claimed herein. However, in order to be responsive to the Examiner, submitted herewith is an Information Disclosure Statement (IDS) which properly cites the CA abstract printouts in the English language.

With regard to the rejection made under 35 USC 112, second paragraph, on pages 3-4 of the Office Action, claim 3 has been cancelled, and claims 7 and 9 have been amended to eliminate the objectionable language. Thus, the rejection under 35 USC 112 has been rendered moot and should be withdrawn.

Claim 1 is rejected under 35 USC 102(b) as being anticipated by SU1043137A; page 4 of the Office Action.

Claims 1, 2, 8, 10 and 11 have been rejected under 35 USC 102(b) as being anticipated by Dean (U.S. Patent No. 6,444,614); pages 5-8 of the Office Action. Claims 1-11 have been rejected under 35 USC 103(a) as being unpatentable over the Dean '614 patent; pages 8-11 of the

Office Action. Both of these rejections are respectfully traversed. Reconsideration and withdrawal thereof are requested.

The background of the invention is explained in the following discussion.

SU1043137 discloses the application of a Fe-EDDS containing solution onto a seed in order to stimulate the yield of Lucerne seeds (see seed dressing technology). The problem has been to accomplish better germination of Lucerne seeds by preparing (stimulating) said seeds with a low toxicity agent comprising an iron compound. The chelate solution comprising 0.05-0.1% Fe and 0.26-0.52% EDDS (together 0.31-0.62% FeEDDS) is used. Thus, very low amounts typically used for seed dressing, less than 0.01 wt% Fe and less than 0.05-wt% EDDS, are provided onto the seed based on the seed weight. In this case it is not possible to use EDDS as a fixing agent. However, EDDS is not used as a fixing agent in the meaning of binding substantial amounts of solid fertilizer to the seed.

Furthermore, a seed dressing agent is applied to seeds in the beginning or end of the botanic growth period, not during dormancy. The consumption of the agent is from 5 to 7 kg/ha. Moreover, it is recommended not to apply the agent into the soil. It is actually concluded that the '137 document is concerned rather with foliar fertilization than with seed coating.

In the present invention, the problem being addressed is to keep an appropriate pre-fertilizer coating layer (not a seed dressing) remaining on the seed surface and simultaneously retain the mechanical and physical properties such as fluidity and low dusting of the treated seeds on a good level.

In SU 10431237, the stimulation has been achieved by employing a treatment with dilute (<0.1%) FeEDDS solution, the treatment accomplishing a minor but still sufficient concentration of iron for stimulation to be remaining on the seed surface after the solvent is vaporized. In the present invention, the product is a seed, which has been coated with two components, namely a fixing agent and a plant nutrient. An essential part of the product is that the plant nutrient acts as

a pre-fertilizer. The function of the fixing agent in the present invention is to bind the plant nutrient onto the seed and to effectively fix it onto the seed surface. The plant nutrient concentration on the seed surface must be relatively high in order to exhibit sufficiency as a pre-fertilizer. A nutrient effect cannot be obtained with the agent/concentration used in SU1043137 as a stimulant.

US 6,444,614 of Dean discloses a similar treatment to SU1043137, stimulating or regulating the growth of seeds or plants in the absence of fertilizers, 2- or more valenced cations or chelated metals. The compound in US 6,444,614 comprises a nitrogen containing asparagine derivative acting as a stimulant. The description of US 6,444,614 does not refer to any fertilizers or to plant nutrients, on the contrary, both in the abstract and in the description, as well as in the claims, it is specifically pointed out that the compound does not comprise any fertilizers (using the term "fertilizer-free") or that the compound is to be employed without any fertilizers.

US 6,444,614 solves the problem of adjusting gibberellic acid transport or synthesis, wherein inhibition controls only plant length but not yield. The solution is provided by applying IDS and EDDS which produces (by stimulating or regulating) higher yield by more uniform seedling emergence and uniform growth insuring uniform pollination, uniform fruit setting and uniform ripening.

The present invention solves the problem of poor adherence of nutrients using existing fixing agents and an uneven coating which may lead to germination problems. The solution is provided by a new fixing agent which improves considerably the adherence of trace elements/nutrient salts on the seeds without lowering the germination thereof.

The NH_4^+ and K^+ provided by the chelate in US 6,444,614 cannot be considered as fertilizers. The solutions used are very dilute; the highest dosage of IDS or EDDS is 4% of seed weight (expressed as ratio 0.04:1). Accordingly, the amount of NH_4^+ would be

$$72/249 * 4\% = 1.16\% \text{ NH}_4^+ \text{ from IDS and } 72/292 * 4\% = 0.99\% \text{ NH}_4^+ \text{ from EDDS}$$

and similarly for K⁺

$156/249*4\% = 2.51\% \text{ K}^+$ from IDS and $156/292*4\% = 2.14\% \text{ K}^+$ from EDDS.

This is however misleading, due to the application as solutions to growth media and not as a coating of seeds. A critical concentration level of 200 ppm is mentioned, where the effect is changing from stimulating to retarding. The highest concentration mentioned is 0.001 mol/l, which is 0.0249 wt% (249 ppm) IDS or 0.0292 wt% (292 ppm) EDDS.

For a reasonable amount of liquid (<10 wt% liquid of seed weight) in the seed coating, the maximum amount of IDS or EDDS added in the seed coating would be <.00249 wt% IDS or <0.00292 wt% EDDS based on seed weight. The accompanying amounts of K⁺ or NH₄⁺ would also be minimal, 0.0007 wt% NH₄⁺ or 0.00156 wt% K⁺ for IDS or EDDS.

In example 2, a slightly higher concentration treatment 0.4625 wt% of K₃H-IDS was used corresponding to 0.286 wt% of IDS (or 0.00115 mol/l IDS). No stimulating or regulating effect was seen with this amount.

For a reasonable amount of liquid (<10 wt% liquid of seed weight) in seed coating the maximum amount ODS added in seed coating would be <.0286 wt% IDS. The accompanying amounts of K⁺ or NH₄⁺ would also be minimal 0.008 wt% NH₄ and 0.0179 wt% K.

This problem of minimal amount of NH₄⁺ and K⁺ is overcome by restricting the lower limit of the nutrient amount to 0.1% or more.

The dilute chelate solutions of US 6,444,614, neither containing nutrients nor di- or trivalent metals, is absorbed into a germinating seed or applied in the soil close to the seed compared to nutrient application (20.1%) as a solution or as a solution with powder onto a dormant seed including a restricted amount of water as solvent in order to avoid germination in the present invention.

The method described in US 6,444,614 has the steps of a) formulating water, substantially free from fertilizer, metal cations or chelated metals, with IDS and/or EDDS or optionally IBA, b) adding adjuvant (without fertilizers) and c) mixing and d) applying.

As a summary of the differences of the present invention as compared to the prior art the following can be noted:

1. US 6,444,614 is intended for a degree of maturity of >0% to <100%, that is, at a stage where the seed or plant is already under development. In the present invention the seed is dormant 0% and can stay so for weeks, months or even years after the coating.
2. The chelates are applied with a cation concentration which is too low for it to function as a nutrient.
3. The applied material is a solution while in the present invention a substantial amount of solid fertilizer is present in powder form.
4. The purpose of addition is to stimulate or regulate growth, while in the present invention a fixing agent is added to bind the desired amount of the trace elements/nutrient salts on the seeds.
5. The quantity is determined by the stimulating effect or regulating effort, while in the present invention the size, the surface quality of the seeds and the amount of the trace elements/nutrient salts to be coated determine the amount.
6. The IDS or EDDS aqueous concentrations in contact with the seed are from <.03 wt% (claims) to <0.3 wt% (example 2), while the range in the present invention is >0.3%, typically 1-50% approaching 100% when the coated seed is drying.

7. The application is to the seed or to the effective proximity of the germinating seeds. In the summary and detailed description the application is from a holding tank by spray nozzles, atomizers or the like by:
- foliar application
 - adding solution to the soil in the proximity of germinating seeds (0mm to about 100mm from the edge of the germinating seed)
 - seed priming or imbibing germinating seeds with the aqueous solution.

In the present invention, a substantial amount (0.1-10%) of fertilizer coating, typically in powder form is added to the seeds and keeps the seeds from germinating by avoiding excessive amounts of water.

In summary, it is respectfully submitted that the SU1043137A and the Dean '614 references fail to disclose, teach or even suggest the presently claimed invention. Based upon these considerations, it is believed that this application is in condition for allowance. Favorable action to this effect is requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Raymond C. Stewart Reg. No. 21,066, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Application No. 10/560,234
Amendment dated May 23, 2008
Reply to Office Action of January 25, 2008

Docket No.: 0696-0225PUS1

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

By 
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